

WHAT IS CLAIMED IS:

1 1. A composition, comprising: isolated human dendritic cells which have
2 been exposed, *in vitro*, to an antigen associated with a tumor cell and a factor or agent that
3 promotes Major Histocompatibility Complex- (MHC-) class I processing of the antigen.

1 2. The composition of claim 1 in which subsequent to exposure, the
2 dendritic cells have been cryopreserved.

1 3. The composition according to claim 1, in which the antigen is a lysate
2 of tumor cells isolated from a patient, a membrane preparation of tumor cells isolated from a
3 patient, a purified tumor specific antigen, a purified tumor associated antigen, a purified
4 tissue associated antigen, a purified tissue specific antigen, or an antigenic fragment thereof.

1 4. The composition according to claim 3, in which the antigen is a
2 prostate tumor associated antigen.

1 5. The composition according to claim 3, in which the antigen is a lysate
2 of prostate tumor cells of a prostate cancer patient, a membrane preparation of prostate tumor
3 cells of a prostate cancer patient, purified prostate specific membrane antigen (PSMA), a
4 peptide having the amino acid sequence Leu Leu His Glu Thr Asp Ser Ala Val (SEQ ID NO.
5 1), a peptide having the amino acid sequence Ala Leu Phe Asp Ile Glu Ser Lys Val (SEQ ID
6 NO. 2), a peptide having the amino acid sequence Xaa Leu (or Met) Xaa Xaa Xaa Xaa Xaa
7 Xaa Val (or Leu) where Xaa represents any amino acid, purified prostate specific antigen
8 (PSA), purified prostate acid phosphatase (PAP), six transmembrane epithelial antigen of the
9 prostate (STEAP), prostate carcinoma tumor antigen (PCTA-1), prostate stem cell antigen
10 (PSCA), or purified prostate mucus antigen recognized by monoclonal antibody PD41.

1 6. The composition according to claim 3, in which the prostate cancer
2 antigen is:

3 Trp Leu Cys Ala Gly Ala Leu Val Leu (SEQ ID NO: 3);

4 Val Leu Ala Gly Gly Phe Phe Leu Leu (SEQ ID NO: 4);

5 Glu Leu Ala His Tyr Asp Val Leu Leu (SEQ ID NO: 5);

6 Asn Leu Asn Gly Ala Gly Asp Pro Leu (SEQ ID NO: 6);

7 Thr Leu Arg Val Asp Cys Thr Pro Leu (SEQ ID NO: 7);
 8 Val Leu Arg Met Met Asn Asp Gln Leu (SEQ ID NO: 8);
 9 Pro Met Phe Lys Tyr His Leu Thr Val (SEQ ID NO: 9);
 10 Asn Met Lys Ala Phe Leu Asp Glu Leu (SEQ ID NO: 10);
 11 Leu Met Tyr Ser Leu Val His Asn Leu (SEQ ID NO: 11);
 12 Met Met Asn Asp Gln Leu Met Phe Leu (SEQ ID NO: 12);
 13 Glu Gly Asp Leu Val Tyr Val Asn Tyr (SEQ ID NO: 13);
 14 Ala Gly Asp Pro Leu Thr Pro Gly Tyr (SEQ ID NO: 14);
 15 Arg Val Asp Cys Thr Pro Leu Met Tyr (SEQ ID NO: 15);
 16 Leu Phe Glu Pro Pro Pro Gly Tyr (SEQ ID NO: 16);
 17 Thr Tyr Glu Leu Val Glu Lys Phe Tyr (SEQ ID NO: 17);
 18 Ala Gly Glu Ser Phe Pro Gly Ile Tyr (SEQ ID NO: 18);
 19 Trp Gly Glu Val Lys Arg Gln Ile Tyr (SEQ ID NO: 19);
 20 Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu (SEQ ID NO: 20);
 21 Asp Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe (SEQ ID NO: 21);
 22 Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys Ser (SEQ ID NO: 22);
 23 Ala Tyr Ile Asn Ala Asp Ser Ser Ile (SEQ ID NO: 23);
 24 Lys Tyr Ala Asp Lys Ile Tyr Ser Ile (SEQ ID NO: 24);
 25 Gly Tyr Tyr Asp Ala Gln Lys Leu Leu (SEQ ID NO: 25);
 26 Thr Tyr Ser Val Ser Phe Asp Ser Leu (SEQ ID NO: 26);
 27 Asn Tyr Ala Arg Thr Glu Asp Phe Phe (SEQ ID NO: 27);
 28 Leu Tyr Ser Asp Pro Ala Asp Tyr Phe (SEQ ID NO: 28);
 29 Leu Pro Ser Ile Pro Val His Pro Ile (SEQ ID NO: 29);
 30 Ser Pro Ser Pro Glu Phe Ser Gly Met (SEQ ID NO: 30);
 31 Val Leu Val His Pro Gln Trp Val Leu (SEQ ID NO: 31);
 32 Lys Leu Gln Cys Val Asp Leu His Val (SEQ ID NO: 32);
 33 Ala Leu Pro Glu Arg Pro Ser Leu Tyr (SEQ ID NO: 33);
 34 Ile Val Gly Gly Trp Glu Cys Glu Lys (SEQ ID NO: 34);
 35 Gln Val His Pro Gln Lys Val Thr Lys (SEQ ID NO: 35);
 36 Val Val His Tyr Arg Lys Trp Ile Lys (SEQ ID NO: 36); or
 37 Cys Tyr Ala Ser Gly Trp Gly Ser Ile (SEQ ID NO: 37).
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1 7. The composition according to claim 1 in which the human dendritic
2 cells were obtained from skin, spleen, bone marrow, thymus, lymph node, chord blood, or
3 peripheral blood.

1 8. The composition according to claim 1, in which the dendritic cells are
2 extended life span dendritic cells.
3

1 9. The composition of claim 1, wherein the factor or agent comprises
2 bacillus Calmette Guerin (BCG) or BCG with lipopolysaccharide (LPS).
3

1 10. A method for producing a tumor cell proliferation inhibiting response,
2 comprising: administering, to a patient in need thereof, an effective amount of human
3 dendritic cells, exposed *in vitro* to an antigen and a factor or agent that promotes Major
4 Histocompatibility Complex- (MHC-) class I processing of the antigen, such that after
5 administration the human dendritic cells presenting the antigen in the context of MHC-class I
6 elicit an immune response or augment an existing immune response which inhibits the
7 proliferation of a tumor cell.

1 11. The method of claim 10, wherein the factor or agent is bacillus
2 Calmette Guerin (BCG) or BCG with lipopolysaccharide (LPS).

1 12. The method according to claim 10, in which the antigen is a lysate of
2 cancer tumor cells isolated from a patient, a membrane preparation of tumor cells isolated
3 from a patient, a purified tumor specific antigen, a purified tumor associated antigen, a
4 purified tissue associated antigen, a purified tissue specific antigen, or an antigenic fragment
5 thereof.

1 13. The method according to claim 12, in which the antigen is a prostate
2 tumor associated antigen.

1 14. The method according to claim 12, in which the prostate tumor
2 associated antigen is a lysate of prostate tumor cells of a prostate cancer patient, a membrane

3 preparation of prostate tumor cells of a prostate cancer patient, purified prostate specific
4 membrane antigen (PSMA), a peptide having the amino acid sequence Leu Leu His Glu Thr
5 Asp Ser Ala Val (SEQ ID NO. 1), a peptide having the amino acid sequence Ala Leu Phe
6 Asp Ile Glu Ser Lys Val (SEQ ID NO. 2), a peptide having the amino acid sequence Xaa Leu
7 (or Met) Xaa Xaa Xaa Xaa Xaa Xaa Val (or Leu) where Xaa represents any amino acid,
8 purified prostate specific antigen (PSA), purified prostate acid phosphatase (PAP), six
9 transmembrane epithelial antigen of the prostate (STEAP), prostate carcinoma tumor antigen
10 (PCTA-1), prostate stem cell antigen (PSCA), or purified prostate mucus antigen recognized
11 by monoclonal antibody PD41.

1 15. The method according to claim 12, in which the prostate cancer
2 antigen is:

3 Trp Leu Cys Ala Gly Ala Leu Val Leu (SEQ ID NO: 3);
4 Val Leu Ala Gly Gly Phe Phe Leu Leu (SEQ ID NO: 4);
5 Glu Leu Ala His Tyr Asp Val Leu Leu (SEQ ID NO: 5);
6 Asn Leu Asn Gly Ala Gly Asp Pro Leu (SEQ ID NO: 6);
7 Thr Leu Arg Val Asp Cys Thr Pro Leu (SEQ ID NO: 7);
8 Val Leu Arg Met Met Asn Asp Gln Leu (SEQ ID NO: 8);
9 Pro Met Phe Lys Tyr His Leu Thr Val (SEQ ID NO: 9);
10 Asn Met Lys Ala Phe Leu Asp Glu Leu (SEQ ID NO: 10);
11 Leu Met Tyr Ser Leu Val His Asn Leu (SEQ ID NO: 11);
12 Met Met Asn Asp Gln Leu Met Phe Leu (SEQ ID NO: 12);
13 Glu Gly Asp Leu Val Tyr Val Asn Tyr (SEQ ID NO: 13);
14 Ala Gly Asp Pro Leu Thr Pro Gly Tyr (SEQ ID NO: 14);
15 Arg Val Asp Cys Thr Pro Leu Met Tyr (SEQ ID NO: 15);
16 Leu Phe Glu Pro Pro Pro Gly Tyr (SEQ ID NO: 16);
17 Thr Tyr Glu Leu Val Glu Lys Phe Tyr (SEQ ID NO: 17);
18 Ala Gly Glu Ser Phe Pro Gly Ile Tyr (SEQ ID NO: 18);
19 Trp Gly Glu Val Lys Arg Gln Ile Tyr (SEQ ID NO: 19);
20 Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu (SEQ ID NO: 20);
21 Asp Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe (SEQ ID NO: 21);
22 Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys Ser (SEQ ID NO: 22);

23 Ala Tyr Ile Asn Ala Asp Ser Ser Ile (SEQ ID NO: 23);
 24 Lys Tyr Ala Asp Lys Ile Tyr Ser Ile (SEQ ID NO: 24);
 25 Gly Tyr Tyr Asp Ala Gln Lys Leu Leu (SEQ ID NO: 25);
 26 Thr Tyr Ser Val Ser Phe Asp Ser Leu (SEQ ID NO: 26);
 27 Asn Tyr Ala Arg Thr Glu Asp Phe Phe (SEQ ID NO: 27);
 28 Leu Tyr Ser Asp Pro Ala Asp Tyr Phe (SEQ ID NO: 28);
 29 Leu Pro Ser Ile Pro Val His Pro Ile (SEQ ID NO: 29);
 30 Ser Pro Ser Pro Glu Phe Ser Gly Met (SEQ ID NO: 30);
 31 Val Leu Val His Pro Gln Trp Val Leu (SEQ ID NO: 31);
 32 Lys Leu Gln Cys Val Asp Leu His Val (SEQ ID NO: 32);
 33 Ala Leu Pro Glu Arg Pro Ser Leu Tyr (SEQ ID NO: 33);
 34 Ile Val Gly Gly Trp Glu Cys Glu Lys (SEQ ID NO: 34);
 35 Gln Val His Pro Gln Lys Val Thr Lys (SEQ ID NO: 35);
 36 Val Val His Tyr Arg Lys Trp Ile Lys (SEQ ID NO: 36); or
 37 Cys Tyr Ala Ser Gly Trp Gly Ser Ile (SEQ ID NO: 37).
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1 16. The method according to claim 10, in which the human dendritic cells
 2 were obtained from skin, spleen, thymus, bone marrow, lymph nodes, chord blood, or
 3 peripheral blood of the patient.

1 17. The method according to claim 10, in which the human dendritic cells
 2 were obtained from peripheral blood.

3 18. The method according to claim 10, in which the dendritic cells were
 4 obtained from a healthy individual HLA-matched to the patient.

1 19. The method according to claim 10, in which the dendritic cells are
 2 extended life span dendritic cells.

1 20. The method according to claim 10, in which the human dendritic cells
 2 were cryopreserved and then thawed prior to administration to the patient.

1 21. The method according to claim 10, in which the patient is suffering
2 from metastatic prostate cancer.

1 22. A method for producing a tumor growth inhibiting response,
2 comprising: administering, to a patient in need thereof, an effective amount of activated T
3 cells, in which the T cells were activated *in vitro* by exposure to human dendritic cells
4 exposed to an antigen and a factor or agent that promotes Major Histocompatibility Complex
5 (MHC) Class I processing of the antigen.

1 23. The method of claim 22, wherein the factor or agent is Bacille
2 Calmette Guerin (BCG) or BCG with lipopolysaccharide (LPS).

1 24. The method according to claim 22, in which the tumor associated
2 antigen is selected from the group consisting of a lysate of tumor cells of a patient, a
3 membrane preparation of tumor cells of a patient, a purified tumor specific antigen, a purified
4 membrane antigen, a purified tissue specific antigen, or an antigenic fragment thereof.

1 25. The method according to claim 22, in which the antigen is a prostate
2 tumor associated antigen.

1 26. The method according to claim 22, in which the antigen is a lysate of
2 prostate tumor cells of a prostate cancer patient, a membrane preparation of prostate tumor
3 cells of a prostate cancer patient, purified prostate specific membrane antigen (PSMA), a
4 peptide having the amino acid sequence Leu Leu His Glu Thr Asp Ser Ala Val (SEQ ID NO.
5 1), a peptide having the amino acid sequence Ala Leu Phe Asp Ile Glu Ser Lys Val (SEQ ID
6 NO. 2), a peptide having the amino acid sequence Xaa Leu (or Met) Xaa Xaa Xaa Xaa Xaa
7 Xaa Val (or Leu) where Xaa represents any amino acid, purified prostate specific antigen
8 (PSA), purified prostate acid phosphatase (PAP), six transmembrane epithelial antigen of the
9 prostate (STEAP), prostate carcinoma tumor antigen (PCTA-1), prostate stem cell antigen
10 (PSCA), or purified prostate mucus antigen recognized by monoclonal antibody PD41.

1 27. The method according to claim 22, in which the antigen is:

2 Trp Leu Cys Ala Gly Ala Leu Val Leu (SEQ ID NO: 3);
3 Val Leu Ala Gly Gly Phe Phe Leu Leu (SEQ ID NO: 4);
4 Glu Leu Ala His Tyr Asp Val Leu Leu (SEQ ID NO: 5);
5 Asn Leu Asn Gly Ala Gly Asp Pro Leu (SEQ ID NO: 6);
6 Thr Leu Arg Val Asp Cys Thr Pro Leu (SEQ ID NO: 7);
7 Val Leu Arg Met Met Asn Asp Gln Leu (SEQ ID NO: 8);
8 Pro Met Phe Lys Tyr His Leu Thr Val (SEQ ID NO: 9);
9 Asn Met Lys Ala Phe Leu Asp Glu Leu (SEQ ID NO: 10);
10 Leu Met Tyr Ser Leu Val His Asn Leu (SEQ ID NO: 11);
11 Met Met Asn Asp Gln Leu Met Phe Leu (SEQ ID NO: 12);
12 Glu Gly Asp Leu Val Tyr Val Asn Tyr (SEQ ID NO: 13);
13 Ala Gly Asp Pro Leu Thr Pro Gly Tyr (SEQ ID NO: 14);
14 Arg Val Asp Cys Thr Pro Leu Met Tyr (SEQ ID NO: 15);
15 Leu Phe Glu Pro Pro Pro Gly Tyr (SEQ ID NO: 16);
16 Thr Tyr Glu Leu Val Glu Lys Phe Tyr (SEQ ID NO: 17);
17 Ala Gly Glu Ser Phe Pro Gly Ile Tyr (SEQ ID NO: 18);
18 Trp Gly Glu Val Lys Arg Gln Ile Tyr (SEQ ID NO: 19);
19 Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu (SEQ ID NO: 20);
20 Asp Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe (SEQ ID NO: 21);
21 Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys Ser (SEQ ID NO: 22);
22 Ala Tyr Ile Asn Ala Asp Ser Ser Ile (SEQ ID NO: 23);
23 Lys Tyr Ala Asp Lys Ile Tyr Ser Ile (SEQ ID NO: 24);
24 Gly Tyr Tyr Asp Ala Gln Lys Leu Leu (SEQ ID NO: 25);
25 Thr Tyr Ser Val Ser Phe Asp Ser Leu (SEQ ID NO: 26);
26 Asn Tyr Ala Arg Thr Glu Asp Phe Phe (SEQ ID NO: 27);
27 Leu Tyr Ser Asp Pro Ala Asp Tyr Phe (SEQ ID NO: 28);
28 Leu Pro Ser Ile Pro Val His Pro Ile (SEQ ID NO: 29);
29 Ser Pro Ser Pro Glu Phe Ser Gly Met (SEQ ID NO: 30);
30 Val Leu Val His Pro Gln Trp Val Leu (SEQ ID NO: 31);
31 Lys Leu Gln Cys Val Asp Leu His Val (SEQ ID NO: 32);

32 Ala Leu Pro Glu Arg Pro Ser Leu Tyr (SEQ ID NO: 33);
33 Ile Val Gly Gly Trp Glu Cys Glu Lys (SEQ ID NO: 34);
34 Gln Val His Pro Gln Lys Val Thr Lys (SEQ ID NO: 35);
35 Val Val His Tyr Arg Lys Trp Ile Lys (SEQ ID NO: 36); or
36 Cys Tyr Ala Ser Gly Trp Gly Ser Ile (SEQ ID NO: 37).

1 28. The method according to claim 22, in which the human dendritic cells
2 were obtained from skin, spleen, bone marrow, thymus, lymph nodes, chord blood, or
3 peripheral blood of the prostate cancer patient.

1 29. The method according to claim 22, in which the human dendritic cells
2 were obtained from peripheral blood.

1 30. The method according to claim 22, in which the human dendritic cells
2 are extended life span dendritic cells.

1 31. The method according to claim 22, in which the human dendritic cells
2 were cryopreserved, thawed and recovered prior to their use to activate the T cells *in vitro*.

1 32. The method according to claim 22, in which the T cells were obtained
2 from the patient.

1 33. The method according to claim 22, in which the T cells were obtained
2 from a healthy individual HLA-matched to the patient.

1 34. The method according to claim 22, in which the patient is suffering
2 from metastatic prostate cancer.

1 35. The method according to claim 22, in which the T cells comprise
2 purified CD8⁺ T cells or a mixed population of CD4⁺ and CD8⁺ T cells.